## REMARKS

Claims 1, 9, 11, 13 and 20 are amended. Claims 1-33 are in the application.

The title and certain independent claims are amended to delete reference to volatility and recite a chalcogenide comprising device, as clearly supported by the specification as-filed.

Examination on the merits is requested.

Respectfully submitted,

Dated: 8-22-02

By: _____
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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**



Patent Application Serial No. ..... 09/943,187
Filing Date ..... August 29, 2001
Inventorship ..... Kristy A. Campbell et al.
Assignee ..... Micron Technology, Inc.
Group Art Unit ..... 2822
Examiner ..... Unknown
Attorney's Docket No. ..... MI22-1742
Title: Method Of Forming Chalcogenide Comprising Devices And Method Of Forming A Programmable Memory Cell Of Memory Circuitry

**VERSION WITH MARKINGS TO SHOW CHANGES MADE ACCOMPANYING PRELIMINARY AMENDMENT SUBSEQUENT TO AUGUST 29, 2001 FILING DATE**

**In the Title**:

The title has been amended as follows. Underlines indicate insertions and ~~strikeouts~~ indicate deletions.

Method Of Forming ~~Non-Volatile Resistance Variable~~ Chalcogenide Comprising Devices And Method Of Forming A Programmable Memory Cell Of Memory Circuitry

**In the Claims**

The claims have been amended as follows. Underlines indicate insertions and ~~strikeouts~~ indicate deletions.

1. (Amended) A method of forming a ~~non-volatile resistance variable~~ chalcogenide comprising device, comprising:

forming a first conductive electrode material on a substrate;

forming chalcogenide comprising material over the first conductive electrode material, the chalcogenide material comprising $A_xSe_y$, where "A" comprises at least one element which is selected from Group 13, Group 14, Group 15, or Group 17 of the periodic table;

forming a silver comprising layer over the chalcogenide material;

irradiating the silver effective to break a chalcogenide bond of the chalcogenide material at an interface of the silver comprising layer and chalcogenide material and diffuse at least some of the silver into the chalcogenide material, and forming an outer surface of the chalcogenide material;

after the irradiating, exposing the chalcogenide material outer surface to an iodine comprising fluid effective to reduce roughness of the chalcogenide material outer surface from what it was prior to the exposing; and

after the exposing, depositing a second conductive electrode material over the chalcogenide material, and which is continuous and completely covering at least over the chalcogenide material, and forming the second conductive electrode material into an electrode of the device.

9. (Amended) The method of claim 1 comprising forming the ~~non-volatile resistance variable~~ device into a programmable memory cell of memory circuitry.

11. (Amemded) A method of forming a ~~non-volatile resistance variable~~ chalcogenide comprising device, comprising:

forming a first conductive electrode material on a substrate;

forming a chalcogenide comprising material over the first conductive electrode material, the chalcogenide material comprising $A_xSe_y$, where "A" comprises at least one element which is selected from Group 13, Group 14, Group 15, or Group 17 of the periodic table;

after forming the chalcogenide comprising material, forming $Ag_2Se$ over the chalcogenide comprising material;

after the irradiating, exposing the $Ag_2Se$ to an iodine comprising fluid effective to etch away at least some of the $Ag_2Se$; and

after the exposing, depositing a second conductive electrode material over the chalcogenide material and forming the second conductive electrode material into an electrode of the device.

13. (Amended) The method of claim 11 comprising forming the ~~non-volatile resistance variable~~ device into a programmable memory cell of memory circuitry.

20. (Amended) A method of forming a ~~non-volatile resistance variable~~ chalcogenide comprising device, comprising:

forming a first conductive electrode material on a substrate;

forming a chalcogenide comprising material over the first conductive electrode material, the chalcogenide material comprising $A_xSe_y$, where "A" comprises at least one element which is selected from Group 13, Group 14, Group 15, or Group 17 of the periodic table;

after forming the chalcogenide comprising material, forming a discontinuous layer of $Ag_2Se$ over the chalcogenide comprising material;

after the irradiating, exposing the $Ag_2Se$ to an iodine comprising fluid effective to etch away at least some of the $Ag_2Se$; and

after the exposing, depositing a second conductive electrode material over the chalcogenide material, and which is continuous and completely covering at least over the chalcogenide material, and forming the second conductive electrode material into an electrode of the device.

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